In the Claims:

1-30 Cancelled

31. (Previously presented) A method of identifying differences between biopolymers, the method comprising the steps:

(a) providing different sets of labeled detector molecules in which:

at least two sets of said labeled detector molecules are specifically bondable to a certain region in said biopolymers; and

the labels of said labeled detector molecules of one of said at least two sets differ from the labels of said labeled detector molecules of another of said at least two sets;

(b) exposing said labeled detector molecules to said biopolymers under conditions permitting bonding reactions to occur to form bondings between said labeled detector molecules and said biopolymers; and

(c) evaluating said bondings via said different labels, said evaluating comprising detecting the presence and intensity of labeled detector molecules at selected regions of said biopolymers whereby differences between said biopolymers may be identified.

32. (Previously presented) The method according to claim 31, wherein said biopolymers are immobilized at least before step (b).

33. (Previously presented) The method according to claim 32, wherein said biopolymers are immobilized on a carrier or in a matrix.

34. (Previously presented) The method according to claim 31, wherein said bonding reactions between each of said labeled detector molecules and said biopolymer are carried out simultaneously or successively.

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35. (Previously presented) The method according to claim 31, wherein said bonding reaction in step (b) is a nucleic acid hybridization or an antigen/antibody reaction.

36. (Previously presented) The method according to claim 35, wherein said nucleic acid hybridization is an *in situ* hybridization.

37. (Previously presented) The method according to claim 31, wherein said biopolymers are nucleic acids or polypeptides.

38. (Previously presented) The method according to claim 37, wherein said nucleic acids are DNA or RNA.

39. (Previously presented)   The method according to claim 37, wherein the nucleic acids are chromosomal DNA.

40. (Previously presented) The method according to claim 31, wherein the labeled detector molecules are nucleic acids or antibodies.

41. (Previously presented) The method according to claim 40, wherein said different nucleic acids are selected from different chromosome region-specific DNA libraries.

42. (Previously presented) The method according to claim 40, wherein each of said sets of labeled detector molecules contains one or more labels different from at least one label contained in another of said sets.

43. (Previously presented) The method according to claim 42, wherein the label comprises a fluorescent dye.

44. (Previously presented) The method according to claim 31, wherein said evaluating step further comprises the steps:

scanning said biopolymers with a scanning device in the longitudinal direction of said biopolymers; and

recording the intensities or intensity ratios of said labels of said labeled detector molecules.

45. (Previously presented) The method according to claim 31, wherein said step of providing different sets of labeled detector molecules further comprises providing at least one set of a localized calibrating probe, said probe comprising calibrating labels.

46. (Currently amended) The method according to claim 4̶7̶, <u>45</u> wherein said calibrating labels comprise all of said labels of said labeled detector molecules of said at least two sets.

47. (Currently amended) The method according to claim 31, wherein said step of providing different sets of labeled detector molecules further comprises providing a number of localized calibrating probes, said number being one less than the total number of said labels in said labeled detector molecules, each of said probes comprising two labels; and said evaluating step further comprises correcting p̶o̶s̶i̶t̶i̶o̶n̶a̶l̶ ̶d̶e̶v̶i̶a̶t̶i̶o̶n̶s̶ ̶o̶f̶ ̶s̶a̶i̶d̶ ̶b̶o̶n̶d̶i̶n̶g̶s̶ ̶b̶y̶ ̶p̶a̶i̶r̶w̶i̶s̶e̶ ̶c̶o̶m̶p̶a̶r̶i̶s̶o̶n̶ <u>registration errors between individual images corresponding to individual labels, said registration errors being introduced by changing filters between the acquisition of said individual images; said correcting step being achieved by pairwise comparison of the positions of the two labels</u> of said calibrating probes.

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48.   (Currently amended) The method according to claim 47, wherein said step of providing different sets of labeled detector molecules further comprises providing a plurality of said calibrating probes; and said evaluating step further comprises correcting positional transformations of said bondings by comparison of the position of the labels of said calibrating probes.

49.   (Cancel) The method according to claim 47, wherein said evaluating steps further comprises forming images of said biopolymers; and aligning said images with respect to said bondings, thereby providing positional correction for said bondings.

50.   (Currently amended) The method according to claim 5+ 48, wherein said step of aligning correcting is automatic.

51.   (Currently amended) The method according to claim 47, 48 wherein said labels of said calibrating probes have known or reproducible constant intensity whereby the signal intensities of all of said labels can be standardized.

52.   (Currently amended) The method according to claim 53 51, wherein said calibrating probes are fluorescence-labeled DNA probes.

53.   (Currently amended) The method according to claim 53 51, wherein said calibrating probes are fluorescence-labeled DNA particles.

54.   (Currently amended) The method according to claim 47 49 wherein said calibrating probes are used for positional correction of said bondings.

55.   (Cancel)